

Lesions in Male Rats

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TABLE A3
Statistical Analysis of Primary Neoplasms in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Pancreatic Islets: Adenoma or Carcinoma			
Overall rates	2/47 (4%)	0/41 (0%)	2/43 (5%)
Adjusted rates	25.0%	0.0%	9.9%
Terminal rates	2/8 (25%)	0/13 (0%)	1/13 (8%)
First incidence (days)	799 (T)	—	617
Life table tests	P=0.650	P=0.135N	P=0.560N
Logistic regression tests	P=0.544	P=0.135N	P=0.683
Cochran-Armitage test	P=0.531		
Fisher exact test		P=0.282N	P=0.657
Pituitary Gland (Pars Distalis): Adenoma			
Overall rates	12/47 (26%)	11/50 (22%)	10/49 (20%)
Adjusted rates	53.6%	42.8%	42.1%
Terminal rates	3/9 (33%)	3/14 (21%)	4/16 (25%)
First incidence (days)	568	558	697
Life table tests	P=0.174N	P=0.334N	P=0.160N
Logistic regression tests	P=0.307N	P=0.419N	P=0.324N
Cochran-Armitage test	P=0.344N		
Fisher exact test		P=0.432N	P=0.362N
Pituitary Gland (Pars Distalis): Adenoma or Carcinoma			
Overall rates	12/47 (26%)	12/50 (24%)	10/49 (20%)
Adjusted rates	53.6%	45.8%	42.1%
Terminal rates	3/9 (33%)	3/14 (21%)	4/16 (25%)
First incidence (days)	568	558	697
Life table tests	P=0.159N	P=0.411N	P=0.160N
Logistic regression tests	P=0.287N	P=0.509N	P=0.324N
Cochran-Armitage test	P=0.325N		
Fisher exact test		P=0.524N	P=0.362N
Preputial Gland: Carcinoma			
Overall rates	1/48 (2%)	6/49 (12%)	1/48 (2%)
Adjusted rates	2.3%	22.5%	2.5%
Terminal rates	0/9 (0%)	1/14 (7%)	0/16 (0%)
First incidence (days)	586	527	628
Life table tests	P=0.361N	P=0.090	P=0.753N
Logistic regression tests	P=0.440N	P=0.058	P=0.750
Cochran-Armitage test	P=0.425N		
Fisher exact test		P=0.059	P=0.753N
Preputial Gland: Adenoma or Carcinoma			
Overall rates	2/48 (4%)	7/49 (14%)	2/48 (4%)
Adjusted rates	4.4%	28.5%	8.6%
Terminal rates	0/9 (0%)	2/14 (14%)	1/16 (6%)
First incidence (days)	429	527	628
Life table tests	P=0.331N	P=0.134	P=0.632N
Logistic regression tests	P=0.454N	P=0.078	P=0.673
Cochran-Armitage test	P=0.436N		
Fisher exact test		P=0.084	P=0.692N

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Talc, NTP TR 421

TABLE A3
Statistical Analysis of Primary Neoplasms in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Skin: Keratoacanthoma or Squamous Cell Carcinoma			
Overall rates	0/49 (0%)	3/50 (6%)	2/50 (4%)
Adjusted rates	0.0%	13.5%	6.6%
Terminal rates	0/9 (0%)	1/14 (7%)	0/16 (0%)
First incidence (days)	-	663	594
Life table tests	P=0.414	P=0.161	P=0.331
Logistic regression tests	P=0.323	P=0.128	P=0.239
Cochran-Armitage test	P=0.319		
Fisher exact test		P=0.125	P=0.253
Testes: Adenoma			
Overall rates	31/49 (63%)	39/50 (78%)	36/50 (72%)
Adjusted rates	100.0%	100.0%	97.0%
Terminal rates	9/9 (100%)	14/14 (100%)	15/16 (94%)
First incidence (days)	551	544	609
Life table tests	P=0.198N	P=0.524	P=0.245N
Logistic regression tests	P=0.333	P=0.056	P=0.268
Cochran-Armitage test	P=0.295		
Fisher exact test		P=0.082	P=0.238
Thyroid Gland (C-cell): Adenoma			
Overall rates	3/45 (7%)	4/46 (9%)	3/46 (7%)
Adjusted rates	24.5%	28.6%	14.5%
Terminal rates	2/9 (22%)	4/14 (29%)	2/16 (13%)
First incidence (days)	682	799 (T)	614
Life table tests	P=0.348N	P=0.620N	P=0.476N
Logistic regression tests	P=0.511N	P=0.641	P=0.625N
Cochran-Armitage test	P=0.560N		
Fisher exact test		P=0.512	P=0.651N
Thyroid Gland (C-cell): Adenoma or Carcinoma			
Overall rates	3/45 (7%)	5/46 (11%)	3/46 (7%)
Adjusted rates	24.5%	33.0%	14.5%
Terminal rates	2/9 (22%)	4/14 (29%)	2/16 (13%)
First incidence (days)	682	787	614
Life table tests	P=0.296N	P=0.568	P=0.476N
Logistic regression tests	P=0.467N	P=0.502	P=0.625N
Cochran-Armitage test	P=0.523N		
Fisher exact test		P=0.369	P=0.651N
All Organs: Mononuclear Cell Leukemia			
Overall rates	24/49 (49%)	21/50 (42%)	23/50 (46%)
Adjusted rates	70.3%	59.9%	62.5%
Terminal rates	3/9 (33%)	4/14 (29%)	6/16 (38%)
First incidence (days)	334	529	492
Life table tests	P=0.298N	P=0.232N	P=0.269N
Logistic regression tests	P=0.501N	P=0.317N	P=0.479N
Cochran-Armitage test	P=0.486N		
Fisher exact test		P=0.310N	P=0.462N

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Lesions in Male Rats

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TABLE A3
Statistical Analysis of Primary Neoplasms in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
All Organs: Benign Tumors			
Overall rates	42/49 (86%)	45/50 (90%)	45/50 (90%)
Adjusted rates	100.0%	100.0%	100.0%
Terminal rates	9/9 (100%)	14/14 (100%)	16/16 (100%)
First incidence (days)	429	544	594
Life table tests	P=0.161N	P=0.314N	P=0.153N
Logistic regression tests	P=0.463	P=0.430	P=0.480
Cochran-Armitage test	P=0.353		
Fisher exact test		P=0.365	P=0.365
All Organs: Malignant Tumors			
Overall rates	34/49 (69%)	34/50 (68%)	34/50 (68%)
Adjusted rates	88.4%	80.9%	80.0%
Terminal rates	6/9 (67%)	7/14 (50%)	9/16 (56%)
First incidence (days)	334	527	248
Life table tests	P=0.222N	P=0.308N	P=0.216N
Logistic regression tests	P=0.534N	P=0.539N	P=0.571N
Cochran-Armitage test	P=0.505N		
Fisher exact test		P=0.527N	P=0.527N
All Organs: Benign or Malignant Tumors			
Overall rates	48/49 (98%)	49/50 (98%)	50/50 (100%)
Adjusted rates	100.0%	100.0%	100.0%
Terminal rates	9/9 (100%)	14/14 (100%)	16/16 (100%)
First incidence (days)	334	527	248
Life table tests	P=0.154N	P=0.241N	P=0.139N
Logistic regression tests	P=0.337	P=0.771	P=0.506
Cochran-Armitage test	P=0.348		
Fisher exact test		P=0.747	P=0.495

a Terminal sacrifice

Number of tumor-bearing animals/number of animals examined. Denominator is number of animals examined microscopically for adrenal gland, bone marrow, brain, clitoral gland, epididymis, gallbladder (mouse), heart, kidney, larynx, liver, lung, nose, ovary, pancreas, parathyroid gland, pituitary gland, preputial gland, prostate gland, salivary gland, spleen, testes, thyroid gland, and urinary bladder; for other tissues, denominator is number of animals necropsied.

b Kaplan-Meier estimated tumor incidence at the end of the study after adjustment for intercurrent mortality

c Observed incidence at terminal kill

d Beneath the control incidence are the P values associated with the trend test. Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between the controls and that dosed group. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The logistic regression tests regard these lesions as nonfatal. The Cochran-Armitage and Fisher exact tests compare directly the overall incidence rates. For all tests, a negative trend or a lower incidence in a dose group is indicated by N.

e Not applicable; no tumors in animal group

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Talc, NTP TR 421

TABLE A4
Summary of the Incidence of Nonneoplastic Lesions in Male Rats in the Lifetime Inhalation Study of Talc^a

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Disposition Summary			
Animals initially in study	50	50	50
Early deaths			
Moribund	23	19	20
Natural deaths	18	17	14
Survivors			
Died last week of study	1	2	3
Terminal sacrifice	8	12	13
Animals examined microscopically	49	50	50
Alimentary System			
Esophagus	(49)	(50)	(49)
Inflammation			1 (2%)
Intestine large, cecum	(42)	(38)	(37)
Hemorrhage		1 (3%)	
Inflammation	9 (21%)	2 (5%)	5 (14%)
Parasite metazoan	3 (7%)	4 (11%)	4 (11%)
Ulcer	1 (2%)		
Intestine large, colon	(43)	(43)	(46)
Hyperplasia, lymphoid	1 (2%)		
Inflammation	1 (2%)		1 (2%)
Mineralization			1 (2%)
Parasite metazoan	2 (5%)	1 (2%)	1 (2%)
Intestine large, rectum	(38)	(41)	(34)
Inflammation	6 (16%)	1 (2%)	1 (3%)
Metaplasia, squamous, focal			1 (3%)
Parasite metazoan		2 (5%)	
Intestine small, duodenum	(48)	(44)	(46)
Inflammation			1 (2%)
Mineralization	1 (2%)		
Necrosis, focal	1 (2%)		
Ulcer	1 (2%)	1 (2%)	
Intestine small, ileum	(39)	(34)	(35)
Hyperplasia, lymphoid		1 (3%)	2 (6%)
Lymphatic, ectasia		1 (3%)	
Liver	(49)	(50)	(48)
Angiectasis, focal	1 (2%)		
Atrophy	1 (2%)		
Basophilic focus	18 (37%)	18 (36%)	19 (40%)
Clear cell focus	3 (6%)	7 (14%)	4 (8%)
Congestion		1 (2%)	
Degeneration, cystic	9 (18%)	17 (34%)	9 (19%)
Degeneration, diffuse			1 (2%)
Eosinophilic focus	2 (4%)	7 (14%)	7 (15%)
Fatty change	16 (33%)	14 (28%)	12 (25%)
Fibrosis	1 (2%)		
Hematoxyt		1 (2%)	
Hyperplasia, focal			1 (2%)
Inflammation, granulomatous, focal	3 (6%)	1 (2%)	
Inflammation, necrotizing, focal			1 (2%)
Necrosis, focal	3 (6%)		1 (2%)
Thrombosis	1 (2%)		
Bile duct, hyperplasia	39 (80%)	46 (92%)	44 (92%)

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Lesions in Male Rats

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TABLE A4
Summary of the Incidence of Nonneoplastic Lesions in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Alimentary System (continued)			
Liver (continued)			
Centrilobular, atrophy	9 (18%)	4 (8%)	7 (15%)
Centrilobular, degeneration	8 (16%)	12 (24%)	9 (19%)
Centrilobular, degeneration, fatty			1 (2%)
Centrilobular, necrosis	5 (10%)		2 (4%)
Mesentery	(2)		(1)
Inflammation			1 (100%)
Pancreas	(48)	(46)	(47)
Lobules, atrophy	11 (23%)	7 (15%)	8 (17%)
Salivary glands	(49)	(50)	(50)
Inflammation	1 (2%)		
Necrosis			1 (2%)
Stomach, forestomach	(49)	(47)	(47)
Hyperkeratosis			1 (2%)
Inflammation	1 (2%)		
Mineralization	1 (2%)	4 (9%)	1 (2%)
Ulcer	5 (10%)	5 (11%)	8 (17%)
Stomach, glandular	(49)	(47)	(47)
Mineralization	6 (12%)	6 (13%)	6 (13%)
Ulcer	3 (6%)	3 (6%)	2 (4%)
Cardiovascular System			
Blood vessel	(4)	(5)	(5)
Aorta, mineralization	3 (75%)	5 (100%)	4 (80%)
Mesenteric artery, aneurysm			2 (40%)
Mesenteric artery, inflammation			1 (20%)
Mesenteric artery, mineralization	3 (75%)	5 (100%)	3 (60%)
Mesenteric artery, thrombosis	1 (25%)	1 (20%)	1 (20%)
Heart	(49)	(50)	(50)
Cardiomyopathy	42 (86%)	47 (94%)	50 (100%)
Atrium, thrombosis	9 (18%)	5 (10%)	11 (22%)
Epicardium, hyperplasia	1 (2%)		
Myocardium, inflammation		1 (2%)	
Myocardium, mineralization	2 (4%)	6 (12%)	5 (10%)
Endocrine System			
Adrenal gland, cortex	(49)	(49)	(48)
Degeneration	1 (2%)		
Degeneration, fatty	8 (16%)		2 (4%)
Degeneration, focal	1 (2%)		
Hyperplasia, diffuse			2 (4%)
Hyperplasia, focal	11 (22%)	4 (8%)	9 (19%)
Necrosis, focal	1 (2%)		
Adrenal gland, medulla	(49)	(48)	(47)
Hyperplasia	19 (39%)	8 (17%)	8 (17%)
Bilateral, hyperplasia	1 (2%)		1 (2%)
Islets, pancreatic	(47)	(41)	(43)
Hyperplasia			1 (2%)
Parathyroid gland	(45)	(45)	(46)
Hyperplasia	6 (13%)	11 (24%)	12 (26%)
Bilateral, hyperplasia	1 (2%)		

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TABLE A4
Summary of the Incidence of Nonneoplastic Lesions in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Endocrine System (continued)			
Pituitary gland	(47)	(50)	(49)
Angiectasis, focal		1 (2%)	
Cyst		1 (2%)	
Pars distalis, hyperplasia	8 (17%)	8 (16%)	7 (14%)
Pars nervosa, hyperplasia		1 (2%)	
Thyroid gland	(45)	(46)	(46)
C-cell, hyperplasia	5 (11%)	7 (15%)	2 (4%)
General Body System			
None			
Genital System			
Epididymis	(49)	(50)	(49)
Spermatocele		1 (2%)	
Preputial gland	(48)	(49)	(48)
Hyperplasia	3 (6%)		1 (2%)
Inflammation	7 (15%)	2 (4%)	5 (10%)
Prostate	(49)	(45)	(48)
Atrophy	1 (2%)		1 (2%)
Inflammation	22 (45%)	14 (31%)	19 (48%)
Seminal vesicle	(49)	(48)	(47)
Atrophy	1 (2%)		
Inflammation	1 (2%)		
Testes	(49)	(50)	(50)
Atrophy	14 (29%)	11 (22%)	16 (32%)
Hyperplasia, lymphoid		2 (4%)	
Hyperplasia, lymphoid, focal			1 (2%)
Interstitial cell, hyperplasia	2 (4%)	1 (2%)	3 (6%)
Serosa, proliferation			1 (2%)
Hematopoietic System			
Bone marrow	(48)	(48)	(47)
Atrophy			2 (4%)
Atrophy, focal		1 (2%)	
Inflammation		1 (2%)	
Mycelofibrosis		1 (2%)	
Myeloid cell, hyperplasia	2 (4%)	3 (6%)	6 (13%)
Lymph node	(49)	(50)	(50)
Hemorrhage, chronic		1 (2%)	
Pancreatic, atrophy	1 (2%)		
Pancreatic, hyperplasia, lymphoid	1 (2%)		
Lymph node, bronchial	(41)	(48)	(49)
Atrophy	2 (5%)		
Hemorrhage		1 (2%)	
Hemorrhage, acute	1 (2%)		
Hemorrhage, chronic	4 (10%)		
Hyperplasia, histiocytic		44 (92%)	46 (94%)
Lymph node, mandibular	(46)	(48)	(47)
Hemorrhage		1 (2%)	
Hyperplasia, lymphoid		2 (4%)	
Hyperplasia, plasma cell		2 (4%)	5 (11%)
Inflammation, chronic active			2 (4%)

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Lesions in Male Rats

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TABLE A4
Summary of the Incidence of Nonneoplastic Lesions in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Hematopoietic System (continued)			
Lymph node, mediastinal	(48)	(49)	(47)
Atrophy	1 (2%)		
Hemorrhage		3 (6%)	
Hemorrhage, acute	1 (2%)		
Hemorrhage, chronic	6 (13%)		
Hyperplasia, histiocytic			40 (82%)
Pigmentation, hemosiderin	1 (2%)		43 (91%)
Lymph node, mesenteric	(49)	(48)	(47)
Atrophy	1 (2%)		
Hemorrhage		2 (4%)	
Hemorrhage, acute	1 (2%)		
Hyperplasia, lymphoid	1 (2%)	2 (4%)	3 (6%)
Hyperplasia, plasma cell			1 (2%)
Inflammation, chronic active			1 (2%)
Spleen	(49)	(50)	(48)
Atrophy	1 (2%)		2 (4%)
Autoysis			1 (2%)
Congestion, chronic	1 (2%)		
Cyst			1 (2%)
Fibrosis		1 (2%)	
Fibrosis, focal		5 (10%)	2 (4%)
Hematopoietic cell proliferation	1 (2%)	2 (4%)	3 (6%)
Hyperplasia, histiocytic		1 (2%)	
Hyperplasia, lymphoid		1 (2%)	1 (2%)
Infarct	3 (6%)		
Inflammation, granulomatous, focal	1 (2%)		1 (2%)
Thymus	(48)	(40)	(43)
Atrophy		2 (5%)	
Cyst	1 (2%)		
Integumentary System			
Mammary gland	(45)	(48)	(50)
Galactocele	1 (2%)		
Skin	(48)	(50)	(50)
Cyst epithelial inclusion		1 (2%)	
Subcutaneous tissue, inflammation			1 (2%)
Tail, necrosis	1 (2%)		
Musculoskeletal System			
Bone	(49)	(50)	(50)
Fibrous osteodystrophy	3 (6%)	4 (8%)	5 (10%)
Coccygeal, necrosis	1 (2%)		
Pelvis, fracture		1 (2%)	
Nervous System			
Brain	(49)	(50)	(50)
Compression	5 (10%)	2 (4%)	2 (4%)
Hemorrhage		1 (2%)	
Infarct			1 (2%)
Necrosis, focal	1 (2%)	2 (4%)	
Spinal cord			(1)
Degeneration			1 (100%)

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Talc, NTP TR 421

TABLE A4
Summary of the Incidence of Nonneoplastic Lesions in Male Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Respiratory System			
Larynx	(48)	(49)	(49)
Inflammation, suppurative	6 (13%)		
Lung	(49)	(50)	(50)
Congestion	1 (2%)		
Crystals, focal	1 (2%)		
Cyst			3 (6%)
Hemorrhage, chronic	2 (4%)		
Infarct	1 (2%)		
Inflammation, granulomatous	2 (4%)		
Inflammation, suppurative		2 (4%)	49 (98%)
Mineralization		4 (8%)	
Alveolar epithelium, hyperplasia	5 (10%)	26 (52%)	38 (76%)
Alveolus, hemorrhage, focal	1 (2%)		
Alveolus, metaplasia, squamous			2 (4%)
Artery, thrombosis	1 (2%)		
Interstitial, fibrosis, focal	1 (2%)	16 (32%)	33 (66%)
Interstitial, mineralization	2 (4%)	1 (2%)	4 (8%)
Peribronchial, hyperplasia, histiocytic		12 (24%)	8 (16%)
Nose	(49)	(48)	(47)
Inflammation, suppurative	2 (4%)	1 (2%)	
Lumen, foreign body	1 (2%)		
Lumen, hemorrhage			1 (2%)
Mucosa, inflammation, suppurative	4 (8%)	5 (10%)	2 (4%)
Nasolacrimal duct, inflammation, suppurative		1 (2%)	
Respiratory epithelium, hyperplasia		3 (6%)	14 (30%)
Trachea	(49)	(50)	(48)
Inflammation, suppurative	3 (6%)		1 (2%)
Special Senses System			
Eye	(3)	(2)	(2)
Cataract	1 (33%)	1 (50%)	2 (100%)
Inflammation, chronic			1 (50%)
Cornea, inflammation, necrotizing			1 (50%)
Cornea, necrosis	1 (33%)		
Lens, cataract	1 (33%)		
Retina, degeneration	2 (67%)	1 (50%)	1 (50%)
Urinary System			
Kidney	(49)	(49)	(48)
Calculus micro observation only			1 (2%)
Cyst	3 (6%)		1 (2%)
Hydronephrosis		1 (2%)	1 (2%)
Nephropathy	45 (92%)	47 (96%)	43 (90%)
Medulla, inflammation		1 (2%)	1 (2%)
Renal tubule, necrosis		1 (2%)	
Ureter			(1)
Calculus micro observation only			1 (100%)
Urethra			(1)
Fibrosis			1 (100%)
Urinary bladder	(49)	(48)	(47)
Calculus gross observation			1 (2%)
Inflammation	1 (2%)		
Mucosa, hyperplasia			1 (2%)

* Incidences are expressed as the ratio of animals with lesions to the number of animals examined microscopically at the site.

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**APPENDIX B
SUMMARY OF LESIONS IN FEMALE RATS
IN THE LIFETIME INHALATION STUDY
OF TALC**

TABLE B1	Summary of the Incidence of Neoplasms in Female Rats in the Lifetime Inhalation Study of Talc	B-2
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Talc, NTP TR 421

TABLE B1
Summary of the Incidence of Neoplasms in Female Rats in the Lifetime Inhalation Study of Talc^a

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Disposition Summary			
Animals initially in study	50	50	50
Early deaths			
Moribund	28	17	27
Natural deaths	11	19	14
Survivors			
Terminal sacrifice	11	13	9
Missing		1	
Animals examined microscopically	50	49	50
Alimentary System			
Intestine small, ileum	(44)	(32)	(38)
Liver	(50)	(48)	(50)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Hepatocellular carcinoma		1 (2%)	
Neoplastic nodule		3 (6%)	1 (2%)
Pancreas	(50)	(46)	(49)
Pharynx			(1)
Squamous cell carcinoma			1 (100%)
Salivary glands	(50)	(48)	(50)
Fibromarcoma			1 (2%)
Sarcoma		1 (2%)	
Stomach, forestomach	(50)	(45)	(49)
Stomach, glandular	(50)	(47)	(50)
Tongue		(2)	
Sarcoma, metastatic		1 (50%)	
Squamous cell papilloma		1 (50%)	
Tooth		(1)	
Adamantinoma benign		1 (100%)	
Cardiovascular System			
Heart	(50)	(48)	(50)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Endocrine System			
Adrenal gland, cortex	(50)	(47)	(49)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Adrenal gland, medulla	(48)	(47)	(49)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Pheochromocytoma malignant		1 (2%)	7 (14%)
Pheochromocytoma benign	13 (27%)	10 (21%)	11 (22%)
Bilateral, pheochromocytoma malignant			3 (6%)
Bilateral, pheochromocytoma benign		4 (9%)	7 (14%)
Islets, pancreatic	(50)	(45)	(49)
Adenoma	1 (2%)	1 (2%)	1 (2%)
Parathyroid gland	(43)	(42)	(47)
Pituitary gland	(50)	(47)	(50)
Pars distalis, adenoma	19 (38%)	18 (38%)	21 (42%)
Pars distalis, carcinoma	3 (6%)	3 (6%)	2 (4%)

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Lesions in Female Rats

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TABLE B1

Summary of the Incidence of Neoplasms in Female Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m³	6 mg/m³	18 mg/m³
Endocrine System (continued)			
Thyroid gland	(50)	(47)	(49)
Bilateral, C-cell, carcinoma	1 (2%)		
C-cell, adenoma	5 (10%)		6 (12%)
C-cell, carcinoma	2 (4%)	2 (4%)	2 (4%)
Follicular cell, adenoma		1 (2%)	
General Body System			
None			
Genital System			
Clitoral gland	(47)	(44)	(46)
Adenoma			1 (2%)
Carcinoma	2 (4%)		1 (2%)
Ovary	(50)	(47)	(50)
Granulosa cell tumor malignant	1 (2%)		
Granulosa cell tumor benign		2 (4%)	
Granulosa-theca tumor benign		1 (2%)	
Bilateral, granulosa-theca tumor malignant			1 (2%)
Uterus	(50)	(48)	(50)
Polyp stromal	5 (10%)	7 (15%)	4 (8%)
Sarcoma stromal		1 (2%)	
Hematopoietic System			
Bone marrow	(50)	(43)	(49)
Lymph node	(50)	(48)	(50)
Lymph node, bronchial	(46)	(47)	(47)
Adenocarcinoma, metastatic, thyroid gland	1 (2%)		
Squamous cell carcinoma, metastatic, lung			1 (2%)
Lymph node, mandibular	(47)	(46)	(47)
Sarcoma, metastatic		1 (2%)	
Lymph node, mediastinal	(47)	(44)	(47)
Adenocarcinoma, metastatic, thyroid gland	1 (2%)		
Carcinoma, metastatic, uncertain primary site			1 (2%)
Fibrosarcoma, metastatic, skin			1 (2%)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Lymph node, mesenteric	(49)	(47)	(47)
Spleen	(50)	(48)	(50)
Thymus	(47)	(44)	(47)
Mixed tumor malignant		1 (2%)	
Myxoma		1 (2%)	
Schwannoma benign			1 (2%)
Thymoma benign	1 (2%)		
Integumentary System			
Mammary gland	(50)	(48)	(50)
Adenocarcinoma	2 (4%)		2 (4%)
Adenoma	1 (2%)	2 (4%)	2 (4%)
Fibroadenoma	11 (22%)	10 (21%)	13 (26%)
Fibroma	1 (2%)	1 (2%)	
Fibrosarcoma			1 (2%)

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TABLE B1
Summary of the Incidence of Neoplasms in Female Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Integumentary System (continued)			
Skin	(50)	(49)	(50)
Keratoacanthoma		1 (2%)	1 (2%)
Subcutaneous tissue, fibrosarcoma		1 (2%)	1 (2%)
Musculoskeletal System			
Bone	(50)	(48)	(50)
Mandible, sarcoma	1 (2%)		
Mandible, sarcoma, metastatic		1 (2%)	
Skeletal muscle	(1)	(1)	
Liposarcoma		1 (100%)	
Nervous System			
Brain	(50)	(48)	(50)
Astrocytoma benign	1 (2%)		
Carcinoma, metastatic, pituitary gland	2 (4%)	1 (2%)	1 (2%)
Ependymoma malignant	1 (2%)		
Respiratory System			
Larynx	(50)	(48)	(48)
Adenocarcinoma, metastatic, thyroid gland	1 (2%)		
Lung	(50)	(48)	(50)
Adenocarcinoma, metastatic, multiple, mammary gland	1 (2%)		
Alveolar/bronchiolar adenoma	1 (2%)		8 (16%)
Alveolar/bronchiolar adenoma, multiple			1 (2%)
Alveolar/bronchiolar carcinoma			4 (8%)
Alveolar/bronchiolar carcinoma, multiple			1 (2%)
Granulosa-theca tumor malignant, metastatic, ovary			1 (2%)
Squamous cell carcinoma			1 (2%)
Special Senses System			
None			
Urinary System			
Kidney	(49)	(47)	(49)
Lipoma		1 (2%)	
Urinary bladder	(50)	(45)	(50)
Systemic Lesions			
Multiple organs ^b	(50)	(49)	(50)
Leukemia mononuclear	13 (26%)	20 (41%)	18 (36%)
Lymphoma malignant lymphocytic		2 (4%)	
Lymphoma malignant mixed		1 (2%)	

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Lesions in Female Rats

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TABLE B1
Summary of the Incidence of Neoplasms in Female Rats in the Lifetime Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Tumor Summary			
Total animals with primary neoplasms ^c	44	47	49
Total primary neoplasms	85	100	124
Total animals with benign neoplasms	38	35	39
Total benign neoplasms	59	65	78
Total animals with malignant neoplasms	23	31	35
Total malignant neoplasms	26	35	46
Total animals with metastatic neoplasms	4	3	4
Total metastatic neoplasms	6	8	10
Total animals with malignant neoplasms, uncertain primary site			1

^a Incidences are expressed as the ratio of animals with lesions to the number of animals examined microscopically at the site.

^b Number of animals with any tissue examined microscopically

^c Primary tumors: all tumors except metastatic tumors

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TABLE B2
Individual Animal Tumor Pathology of Female Rats in the Lifetime Inhalation Study of Talc: 0 mg/m³

Number of Days on Study	3 3 3 5 5 5 5 5 6 6 6 6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
	7 9 9 5 6 8 8 9 2 3 4 7 7 8 9 1 1 2 3 6 6 6 6 6 6 6 6 6 6 6 6 7 7
	0 0 8 8 8 4 6 9 6 4 7 7 8 8 6 6 9 7 1 2 6 7 8 2 9
Carcass ID Number	3 4 3 3 3 3 3 4 4 3 3 3 3 4 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 4
	3 3 7 0 5 5 3 2 5 8 0 7 0 0 5 2 0 0 9 8 5 2 2 3 0
	5 0 7 6 0 7 2 9 8 4 2 6 2 8 9 7 5 6 7 2 1 8 6 1 8
	1 1
Alimentary System	
Esophagus	M +
Intestine large	+ + + + + + + + + + A +
Intestine large, cecum	+ A + + + + + + + + A + + + + A A + + + + + + + + + + + + + + + +
Intestine large, colon	+ + + + + + + + + + A + + + + A + + + + + + + + + + + + + + + + +
Intestine large, rectum	+ A M + + + A + M M M + + + + + + + + M + + M + + + + + + + +
Intestine small	+ A + + + + + + + + A +
Intestine small, duodenum	+ A + + + + + + + + A +
Intestine small, ileum	+ A + + + + + + + + A + + + + A + + + A A A A + + + + + + + + +
Intestine small, jejunum	+ A + + + + A + + A + + + + A + + + A + + + + + + + + + + + + + +
Liver	+ +
Mesentery	+ +
Pancreas	+ +
Salivary glands	+ +
Stomach	+ +
Stomach, forestomach	+ +
Stomach, glandular	+ +
Cardiovascular System	
Blood vessel	+ +
Heart	+ +
Endocrine System	
Adrenal gland	+ +
Adrenal gland, cortex	+ +
Adrenal gland, medulla	+ +
Pheochromocytoma benign	X X X
Islets, pancreatic	+ +
Adenoma	+ +
Parathyroid gland	+ M M + + + + + + + + M + + + + + M + + + + + + + + + + + + + M
Pituitary gland	+ +
Pars distalis, adenoma	X X X X
Pars distalis, carcinoma	X X X X X X X X
Thyroid gland	+ +
Bilateral, C-cell, carcinoma	X
C-cell, adenoma	+ +
C-cell, carcinoma	+ +
General Body System	
None	

+: Tissue examined microscopically
A: Autolysis precludes examination

M: Missing tissue
I: Insufficient tissue

X: Lesion present
Blank: Not examined

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Lesions in Female Rats

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TABLE B2
Individual Animal Tumor Pathology of Female Rats in the Lifetime Inhalation Study of Talc: 0 mg/m³ (continued)

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TABLE B2
Individual Animal Tumor Pathology of Female Rats in the Lifetime Inhalation Study of Talc: 0 mg/m³ (continued)

Number of Days on Study	3 3 3 5 5 5 5 5 6 6 6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7
	7 9 9 5 6 8 8 9 2 3 4 7 7 8 9 1 1 2 3 6 6 6 6 7 7
	0 0 8 8 8 4 6 9 6 4 7 7 8 8 6 6 9 7 1 2 6 7 8 2 9
Carcass ID Number	3 4 3 3 3 3 4 4 3 3 3 3 4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 4
	3 3 7 0 5 5 3 2 5 8 0 7 0 0 5 2 0 0 9 8 5 2 2 3 0
	5 0 7 6 0 7 2 9 8 4 2 6 2 8 9 7 5 6 7 2 1 8 6 1 8
	1 1
Genital System	
Clitoral gland	M + M + + +
Carcinoma	+ +
Ovary	X
Granulosa cell tumor malignant	+ +
Uterus	+ +
Polyp stromal	X
Hematopoietic System	
Bone marrow	+ +
Lymph node	+ +
Lymph node, bronchial	+ +
Adenocarcinoma, metastatic, thyroid gland	X
Lymph node, mandibular	+ + M +
Lymph node, mediastinal	M + + + + + + + + + + M + + + + + + + + + + + + +
Adenocarcinoma, metastatic, thyroid gland	X
Lymph node, mesenteric	M +
Spleen	+ +
Thymus	M M M +
Thymoma benign	
Integumentary System	
Mammary gland	+ +
Adenocarcinoma	X X
Adenoma	X X X
Fibroadenoma	X
Fibroma	
Skin	+ +
Musculoskeletal System	
Bone	+ +
Mandible, sarcoma	X
Skeletal muscle	+
Nervous System	
Brain	+ +
Astrocytoma benign	X
Carcinoma, metastatic, pituitary gland	X
Ependymoma malignant	

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Lesions in Female Rats

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TABLE B2
Individual Animal Tumor Pathology of Female Rats in the Lifetime Inhalation Study of Talc: 0 mg/m³ (continued)

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TABLE B2
Individual Animal Tumor Pathology of Female Rats in the Lifetime Inhalation Study of Talc: 0 mg/m³ (continued)

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